



NOVA WS-80 MID

electronic single-phase energy meter multifunctional with the power monitor

with changes valid to: 7.6.2012

Features and specifications are subject to change.

USER MANUAL

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WARNING!

Device installation and use must be carried out only by qualified staff.

Switch off the voltage before device installation.

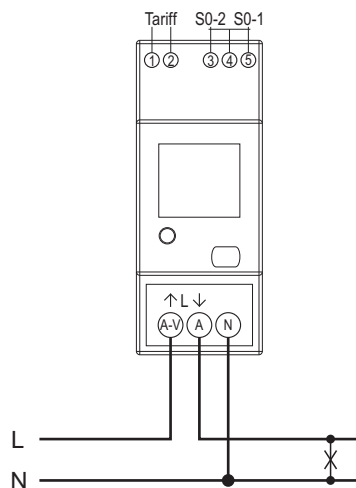
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KEEP THIS INSTRUCTION MANUAL - CONTAINS, I.A., EU-DECLARATION OF CONFORMITY

WIRING DIAGRAM

1PHASE - 2 WIRES



AVAILABLE MODELS

Model	Voltage	Frequency	MID certified
NOVA WS-80 MID	230 V	50 Hz	■

In all device models, partial counters are resettable.

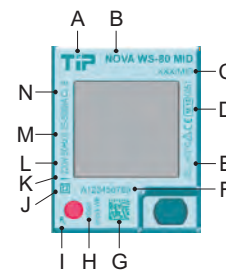
OVERVIEW



1. Tariff input terminals
2. Terminals for the two S0 outputs
3. Backlight LCD display
4. Metrological LED
5. Multifunction key
6. Current, voltage and neutral terminals
7. Safety-sealing (DO NOT REMOVE)
8. Optical COM port



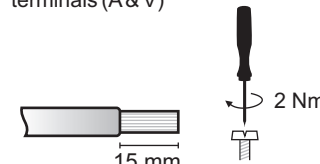
SYMBOLS ON FRONT PANEL (EXAMPLE)



- A. Company logo
- B. Device name
- C. Type approval certification
- D. MID approval symbols
- E. Working temperature range
- F. Serial number
- G. Data Matrix
- H. Meter constant (metrological LED) R_L
- I. Metrological LED symbol
- J. Protection class
- K. Wiring type (1phase, 2 wires)
- L. Nominal voltage/frequency
- M. Base current (max current) I_{max}
- N. Accuracy class

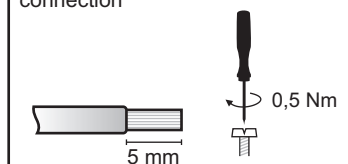
CABLE STRIPPING LENGTH

Connection measuring terminals (A & V)



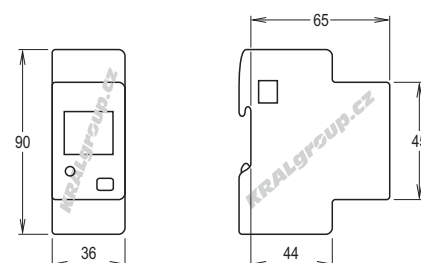
Use a PZ2 screwdriver.

S0 output / tariff terminals connection



Use a blade screwdriver with 0.8x3.5 mm size.

DIMENSIONS (mm)



SYMBOLS ON DISPLAY

Display test can be carried out by pressing the key for 10 s.

SYMBOL	DESCRIPTION
	Metrological parameters corrupted (Code: XX will be displayed in the main area). The counter cannot be used and it must be returned to the Manufacturer.
	Active S0 output number
	Delivered (→), supplied (←) power or energy value
	Identify the Setup page (SETUP) or the Info page (INFO)
	Communication ON status
	SETUP page
	Capacitive / inductive value
	Main area
	Balance counter value. If a line is displayed over the symbol (BAL), the displayed value is NEGATIVE.
	Partial counter value. If flashing, the counter is stopped.
	1 or 2 tariff counter value
	Measuring unit area

KEY FUNCTIONS

HOW TO	WHERE	PRESS TIME
Scroll loops	Any page except for Setup	Twice quickly
Scroll pages in a loop	Any loops page	Instantaneous
Access Setup pages	"Setup?" page	>3 s
Enable setup for a value/digit	Setup pages	Twice quickly
Change a value/digit	Setup pages	Instantaneous
Confirm a value/digit	Setup pages	Twice quickly
Change item (Y, N, C)	"Save?" page	Instantaneous
Confirm the displayed item (Y, N, C)	"Save?" page	>3 s
Display the functions available for the shown counter	Partial counter page	>3 s
Change function (Start, Stop, Reset)	Partial counter page	Instantaneous
Confirm the displayed function (Start, Stop, Reset)	Partial counter page	>3 s
Display test	Any page except for Setup	>10 s

MEASUREMENTS

	SYMBOL	MEASURE UNIT	DIS-PLAY	COM PORT	S0 OUTPUT
INSTANTANEOUS VALUES					
Voltage	V	V		●	
Current	I	A		■	
Power factor	PF			●	
Apparent power	S	kVA	■	■	
Active power	P	kW	■	■	
Reactive power	Q	kvar	■	■	
Frequency	f	Hz		●	
Power direction	IMP/EXP (Supply/Delivery)		●	●	

	SYMBOL	MEASURE UNIT	DIS-PLAY	COM PORT	S0 OUTPUT
RECORDED DATA					
Total active energy	L	kWh	■	■	■
Total reactive energy ind. and cap.	L	kvarh	■	■	■
Total apparent energy ind. and cap.	L	kVAh	■	■	■
T1/T2 tariff energy	L	kWh, kvarh, kVAh	■	■	
Resettable partial energy counters	L	kWh, kvarh, kVAh	■	■	
Energy balance	L	kWh, kvarh, kVAh	■	■	
OTHER INFORMATION					
Present tariff	T	1/2		●	
Undervoltage/overvoltage	VOL, VUL	ON/OFF		●	
Undercurrent / overcurrent	IOL, IUL	ON/OFF		●	
Underfrequency/overfrequency	fOL, fUL	ON/OFF		●	
Partial counters	PAR	START/STOP	●	●	
Active communication	COM	ON/OFF	●		
Active S0 pulse	S0-1, S0-2	ON/OFF	●		
Error condition	ERR	01/02	●	●	
LEGEND: ● = STANDARD ■ = BIDIRECTIONAL VALUE					

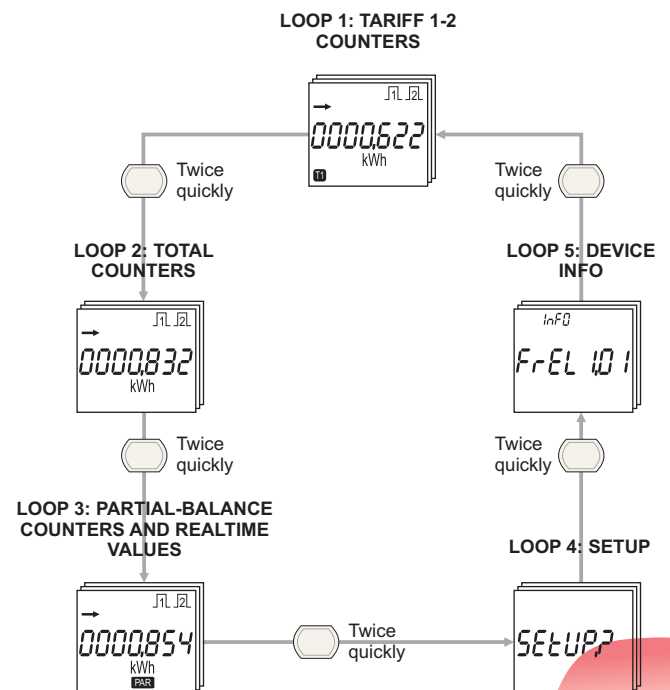
All the system counters (Σ) programmable for S0 outputs are shown in "S0 OUTPUT" column. It is not allowed to set the same counter for both outputs.

BALANCE COUNTER VALUES CALCULATION

BALANCE COUNTER	FORMULA
kWh	[→kWh T1] - [←kWh T1] + [→kWh T2] - [←kWh T2]
kVAh ind	[→kVAh ind T1] - [←kVAh ind T1] + [→kVAh ind T2] - [←kVAh ind T2]
kVAh cap	[→kVAh cap T1] - [←kVAh cap T1] + [→kVAh cap T2] - [←kVAh cap T2]
kvarh ind	[→kvarh ind T1] - [←kvarh ind T1] + [→kvarh ind T2] - [←kvarh ind T2]
kvarh cap	[→kvarh cap T1] - [←kvarh cap T1] + [→kvarh cap T2] - [←kvarh cap T2]

PAGE STRUCTURE

Device pages are grouped in 5 loops.



Press the key once to scroll pages in a loop.

HOW TO START / STOP / RESET PARTIAL COUNTERS

Feature available only on partial counter pages.

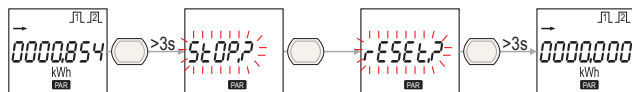
HOW TO START DISPLAYED PARTIAL COUNTER



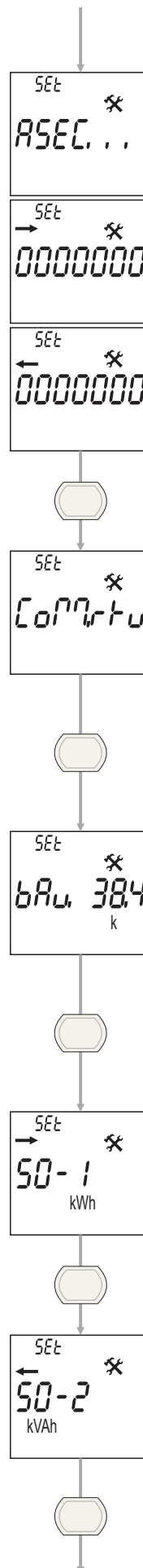
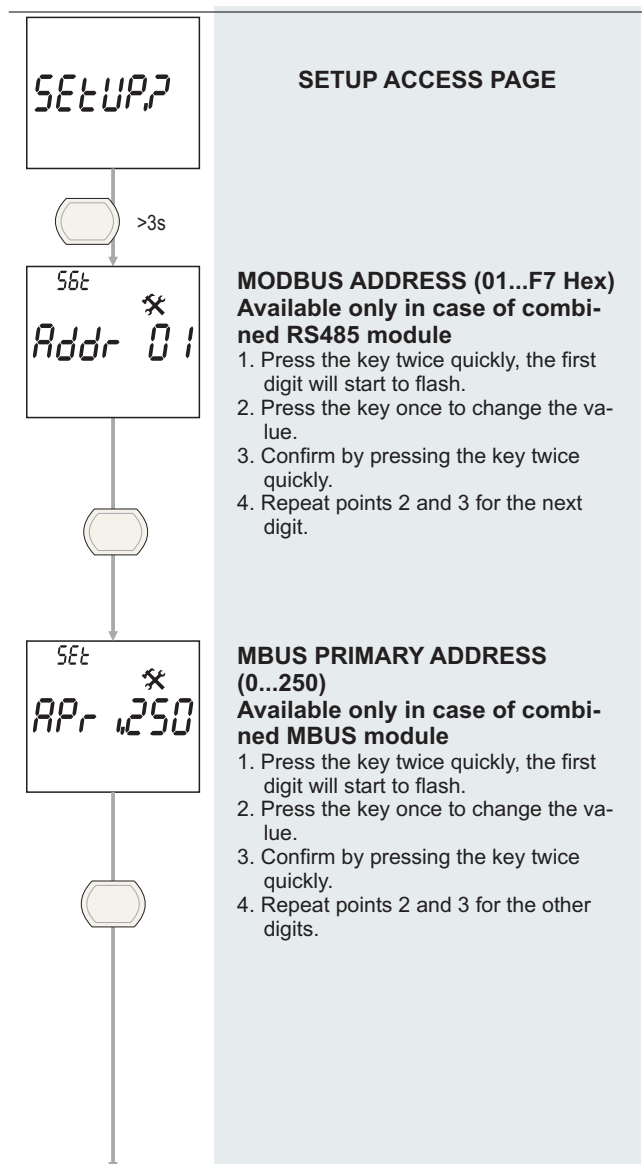
HOW TO STOP DISPLAYED PARTIAL COUNTER PREVIOUSLY STARTED



HOW TO RESET DISPLAYED PARTIAL COUNTER



SETUP PAGES



MBUS SECONDARY ADDRESS (0...99999999)

Available only in case of combined MBUS module

The value is displayed on 2 pages:

- page 1 (→): digit from 7 to 1
- page 2 (←): digit from 8 to 2

1. Press the key twice quickly, the digit 8 of the secondary address will start to flash.
2. Press the key once to change the value.
3. Confirm by pressing the key twice quickly.
4. Repeat points 2 and 3 for the other digits.

MODBUS MODE (RTU=8N1, ASCII=7E2)

Available only in case of combined RS485 module

1. Press the key twice quickly, the mode will start to flash.
2. Press the key once to change the mode.
3. Confirm by pressing the key twice quickly

COMMUNICATION SPEED

Page and range available according to the combined communication module

1. Press the key twice quickly, the value will start to flash.
2. Press the key once to change the value.
3. Confirm by pressing the key twice quickly.

REGISTER ASSIGNED TO S0 OUTPUT (1-2)

1. Press the key twice quickly, the items which identify the register (e.g. →, kWh) will start to flash.
2. Press the key once to change the register to be assigned to the output.
3. Confirm by pressing the key twice quickly.



PARTIAL COUNTERS RESET

1. Press the key twice quickly, a new page for confirmation will be displayed.
2. Press the key once to change the flashing value, **Y** to confirm the reset, **N** to cancel.
3. Confirm by pressing the key at least 3 s.

SETUP PAGES

>3s

ON ANY SETUP PAGE

SET

SAVEP

Y

EXIT FROM SETUP

1. Press the key once to change the flashing value, **Y** to exit and save the settings, **N** to exit without saving, **C** to continue scrolling setup pages.
2. Confirm by pressing the key at least 3 s.

INFO PAGES

Up to 3 INFO pages can be displayed to show details about:

1. counter firmware version
2. checksum
3. combined communication module in use

The third page, which shows communication module in use, can change according to the module combined with the counter (see table). If the counter has no combined module this page will not be displayed.

COMBINED COMMUNICATION MODULE	DETAIL DISPLAYED ON THE INFO PAGE
RS485 MODBUS	Modbus
M-BUS	Mbus
LAN GATEWAY	Lan
EIB/KNX i.V	(no info - in preparation)

TECHNICAL FEATURES

Data in compliance with standards	EN50470-1, EN 50470-3, EN 62053-23, EN 62053-31		
GENERAL			
Housing in compliance with standard	DIN 43880		
Terminals in compliance with standard	EN 60999		
AUXILIARY POWER SUPPLY			
Power supplied from the voltage circuit	-		
Nominal measurement voltage	±20%		
Consumption	7,5 VA max.		
Nominal frequency	50 Hz		
VOLTAGE/FREQUENCY AND WIRING MODES			
MODEL	WIRING	V	f
NOVA WS-80 MID	1 phase 2 wires	230 V	50 Hz
CURRENT (A)			
Maximum current I _{max}	80 A		
Basic current I _{ref} (I _b)	5 A		
Ratio current I _r	500 mA		
Minimum current I _{min}	250 mA		
Starting current I _{st}	20 mA		
ACCURACY			
Active energy class B according to	EN 50470-1-3		
Reactive energy class A according to	EN 62053-23		
2 S0 OUTPUTS			
Passive optoisolated	-		
Maximum values (in compliance with EN 62053-31)	250 V _{AC-DC} - 100 mA		
Pulse length	50 ±2ms ON time min. 30 ±2ms OFF time		
TARIFF INPUT			
Active optoisolated	-		
Min.-max. voltage	276 V _{AC-DC}		
METROLOGICAL LED			
Meter constant R _L	1000 Imp./kWh		
WIRE DIAMETER FOR TERMINALS			
Measuring terminals (A & V)	1,5...35 mm ²		
S0 output / tariff terminals	0,14...2,5 mm ²		
SAFETY ACCORDING TO EN 50470-1 STANDARD			
Indoor installation	-		
Pollution degree	2		
Protective class (EN 50470)	II		
Pulse voltage test	1,2/50µs 6kV		
AC voltage test (EN 50470-3, 7.2)	4 kV		
Housing material flame resistance	UL 94 class V0		
ENVIRONMENTAL CONDITIONS			
Mechanical environmental	M1		
Electromagnetic environmental	E2		
Operating temperature	-25°C ... +55°C		
Storage temperature	-25°C ... +75°C		
Relative humidity (without condensation)	max. 80%		
Sinusoidal vibration amplitude	50 Hz ±0,075 mm		
Protection degree - frontal part (granted only in case of installation in a cabinet with at least IP51 protection degree)	IP 51		
Protection degree - terminals	IP 20		
INTERNAL USE	-		

METROLOGICAL LED AND PULSES ON S0 OUTPUT

METROLOGICAL LED PULSES R _L	S0 PULSES R _A
1000 Imp./kWh	500 Imp./kWh & Imp./kvarh & Imp./kVAh

WASTE DISPOSAL

ATTENTION - Dispose of ecologically!
Does not belong to the mixed waste!

This product may not be, at the end of its useful life, disposed of with normal household waste but must be returned to a collection point for recycling of electronic equipment. Please check with your dealer or local authorities for disposal of the competent authority.



EXAMPLES OF READINGS AND CALCULATED CONSUMPTION:

Date of reading		Register-/s status		Calculated consumption
		Initial	Final	
	T1 kWh:			
	T2 kWh:			
	T1 kVAh:			
	T2 kVAh:			
	T1 kWh:			
	T2 kWh:			
	T1 kVAh:			
	T2 kVAh:			
	T1 kWh:			
	T2 kWh:			
	T1 kVAh:			
	T2 kVAh:			
	T1 kWh:			
	T2 kWh:			
	T1 kVAh:			
	T2 kVAh:			
	T1 kWh:			
	T2 kWh:			
	T1 kVAh:			
	T2 kVAh:			

NOTES:

- 1) Register status = overwritten value according to counter status
- 2) Calculated consumption = difference between final and initial state of the counter

EU-DECLARATION OF CONFORMITY:

Product name: SINGLE-PHASE, STATIC ENERGY-HOUR
METER OF ACTIVE AND REACTIVE
ENERGY IN BOTH DIRECTIONS OF
ENERGY FLOW

Type of designation: NOVA WS-80 MID

EC-Type test certificate: 153/MID

Number and address of notified person:
(Module B+D) 0051
IMQ SpA
Via Quintiliano 43
I-20138 MILANO

Metrology marking: CE-M13-0051

The energy-hour meters of type NOVA WS-80 MID meet the requirements of EN50470-1, EN 50470-3, EN 62053-23, EN 62053-31 of both current directions of class B for active energy and of class A for reactive energy for direct connection into the three-phase electricity network.

Potential-free-pulse-transmitter complies with DIN EN 62053-31 standard for installation of broadcasting impulses for Class A and B for the transmitter of type "S0".

The meter conforms to MID requirements for billing and metering as two-tariffs energy meter with regards to the terms and to the way of its connection to the single-phase electricity network.

The external dimensions of the meter corresponds to the built-in devices of the 2-modules (2-TE) size according to DIN 43880 standard.

Installation of the energy meters is designed for mounting on a standard DIN-rail 35 mm wide according to DIN EN 50022 standard.

The electric protection class of the energy meters corresponds to IP20 (IP51) according to DIN EN 60529 standard.

Prague, 22.10.2013

Your partner for measuring the energy

DIN RAIL MOUNTED kWh METERS
RE/CONDITIONED kWh METER
PRE/PAYMENT kWh METERS
CREDIT CARDS kWh METERS
GSM OPERATED kWh METERS
SPECIAL kWh METERS
OTHERS FOR THE MEASUREMENT OF EL. ENERGY
CURRENT TRANSFORMERS
MEASURING POWER IN HARBORS AND ANCHORAGE SHIP
(MARINAS)
MEASURING POWER IN THE CAMP, IN TRADE FAIR,
EXHIBITION, BUSINESS, COMMERCIAL AND
ADMINISTRATIVE CENTERS
ENERGY MANAGEMENT SYSTEMS
(M-Bus, PLC, GSM, RS-485, EIB, INSTA-BUS)

Our advice is for You with pleasure

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